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The Impact of State Ownership on Share Price Informativeness: The Case of the Split Share Structure Reform in China

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Abstract: We examine the impact of state ownership on share price informativeness by using the unique setting of the Split Share Structure Reform in China. This reform abolishes the trading restriction of shares held mainly by state shareholders, which in turn renders their wealth more sensitive to share price movement and decreases their conflict of interest with private shareholders. We expect this change to strengthen the corporate governance incentives of state shareholders and reduce the information asymmetry of Chinese listed firms. We confirm this prediction through empirical evidence of increased share price informativeness among firms that are more sensitive to the impact of this reform, i.e. those with more state ownership or restricted shares. Our finding implies that this reform benefits the information environment and minority shareholders of the Chinese stock market.

JEL Code: G14; G15; G30; G38

Keywords: State ownership; Share price informativeness; Split Share Structure Reform; China

This version: December 2011

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1. Introduction

The Split Share Structure Reform of China (e.g. Firth, Lin, and Zou, 2010; Li, Wang, Cheung and Jiang, 2011) that started in 2005 marks a major change in the institutional setting of the Chinese stock market. Prior to this reform, state shareholders mainly held restricted shares that cannot be freely traded in the stock market as the shares held by private shareholders. This creates a conflict of interest between state and private shareholders since share price movement in the capital market does not affect the wealth of the former group. As a result, the widespread concentration of state ownership in Chinese listed firms (e.g. Allen, Qian, and Qian, 2005) induce less incentive alignment effect and more entrenchment effect, which in turn reduces corporate governance and transparency (e.g. Gul, Kim, and Qiu, 2010). The reform abolishes this split share structure and causes state shareholders' wealth to become sensitive to share price movement. This should align the incentive of state and private shareholders to monitor and ensure managers maximize the market value of their firms.

In this study, we examine whether this reform improves the corporate transparency of Chinese listed firms through their share price informativeness. This is an important question because corporate transparency facilitates the efficient allocation of financial resource in capital market, which is essential to economic development and growth. For the growing interest among academics, policy makers, and practitioners on the economic development of China, we provide empirical evidence to verify the impact of this major reform on the information environment of the Chinese capital market. For the corporate governance

literature, which largely focuses on developed countries (e.g. Denis and McConnell, 2003), we provide empirical evidence from an emerging country with a unique research setting of exogenously reduced conflict of interest between shareholders.

The influence of governance mechanism on corporate transparency is well established in the literature (see Section 2.2 for a review). The separation of ownership and control leads to information asymmetry between corporate insiders and external stakeholders (Jensen and Meckling, 1976). Managers and controlling owners with greater opportunities to expropriate wealth from outside investors have greater incentives to conceal their self-serving deeds by withholding information or window dressing performance (Shleifer and Vishny, 1997). Such opportunistic behaviors should reduce when corporate governance becomes more effective. This should also increase the information content and credibility of firms' disclosure, which renders share price more informative of firm-specific information. Thus, increased share price informativeness among Chinese listed firms following the Split Share Structure Reform could reflect corporate governance improvement.

This corporate governance effect is generated mainly through the incentive alignment between controlling and minority shareholders and not necessarily through changes in ownership structure or control. Such alignment occurs despite of the reform's gradual implementation process (see Section 2.3 for details) and applies to state shareholders who are not immediately selling their shares. The concern that this incentive alignment cannot be

realized if state shareholders believe that the tradability of their shares are only symbolic because the Chinese government does not relinquish its control on any listed firms is mitigated in two ways. First, well-established government policy seeks to maintain state influence only on strategically important sectors. Second, media anecdotal evidences confirm that some state shareholders are actively trading their shares after the restrictions are lifted.

Given the aforementioned arguments, we hypothesize that the Split Share Structure Reform should increase the share price informativeness of Chinese listed firms, especially those with higher proportion of state or restricted shares since the impact of this reform is expected to be more pronounced among such firms. To test our assertion, we sample all Chinese firms listed in Shanghai and Shenzhen stock exchanges over the sample period of 2001 to 2008.¹ Among firms with higher state or restricted shares, we observe lower share price informativeness prior to the reform and greater increase in share price informativeness following the reform. These results are robust to control of firm characteristic and governance variables, as well as industry and regional effect. Our result is also not sensitive to share price informativeness estimated through alternative model specifications and data frequencies.

The rest of the paper is organized as follows. Section 2 discusses the literature and hypotheses. Section 3 describes our sample and methodologies. Section 4 presents our empirical findings. Section 5 shows the robustness check. Section 6 concludes.

2. Literature and hypotheses

2.1 Ownership structure and corporate governance

Ownership structure affects this corporate governance through two opposing effects, i.e. incentive alignment versus entrenchment. The incentive alignment effect occurs when the profit or firm value maximization objective of minority shareholders is consistent with that of large shareholders, who in turn also has more expertise and capability to monitor managers (e.g. Shleifer and Vishny, 1986). Empirical evidence confirms this by showing that firms with large shareholders are associated with higher management turnover (Kang and Shivdasani, 1995) and tighter executive compensation control (Hartzell and Starks, 2003). Gomes (2000) also suggests that a high degree of ownership concentration also serves as a signal for reputation-building by controlling owners. In this context, large shareholders have more to lose from a decline in their firm's value than they could gain from diverting their firm's cash flow into their pocket.

The entrenchment effect of large shareholders is conceptually similar to that when managerial ownership is high. Theoretical (e.g. Stulz, 1988) and empirical (e.g. McConnell and Servaes, 1990) studies suggest that managers with greater ownership also have more incentives to expropriate the wealth of outside shareholder, which in turn reduces the value of the firm. Shleifer et al. (1997) argue that large shareholders who gain effective control of a firm's management also have greater incentives to pursue their own interest, which is not necessarily the interest of other investors. Johnson, La Porta, Lopez de-Silanes, and Shleifer

(2000) confirm that controlling shareholders transfer assets and profits out of the firm for their own benefit and call this “tunneling”. Claessens, Djankov, Fan, and Lang (2002) show that firm values drop when the control rights of large shareholders exceed their cash-flow rights.

2.2 Corporate governance and transparency

Empirical studies confirm the role of corporate governance in determining corporate transparency.² Beasley (1996) shows firms with more independent board, greater outside director ownership, and longer outside director tenure are associated with less financial statement fraud. Dechow, Sloan, and Hutton (1996) show that firms manipulating earnings are more likely to be those with less independent board or CEO duality. Klein (2002) documents a negative relationship between abnormal accruals and the independence of audit committee or board. Ajinkya, Bhojraj, and Sengupta (2005) find that firms with more outside directors and greater institutional ownership are more likely to issue management earnings forecasts that are more accurate and less optimistically biased. Armstrong, Balakrishnan, and Cohen (2010) find that information asymmetry decreased and financial statement informativeness increased following passage of antitakeover laws.

The positive relationship between governance and corporate transparency is also largely confirmed in China. For instance, Yuan, Zhang, and Zhang (2007) provide evidence of greater earnings management among Chinese state-controlled listed firms. They interpret this as an evidence of greater entrenchment effect over incentive alignment effect from large

shareholders of state-controlled firms. Wang, Wong, and Xia (2008) find Chinese state-controlled listed firms are more likely to hire small audit firms within the same region. They argue that collusion incentive between firms and auditors to cover-up earnings manipulation could be a possible explanation for this pattern. Gul et al. (2010) document less share price informativeness among Chinese firms with higher degree of ownership concentration. They also show that foreign ownership and auditor quality are inversely related with share price informativeness.

2.3 Split Share Structure Reform in China

Since 1978, China began to make major reforms to its economy, moving from a centrally planned to a market oriented economy. After the stock market was established in the early 1990s, it imposed a split share structure that divides the shares of listed firms into restricted and tradable ones. Restricted shares are classified into state and legal person shares, which are largely held by central or local government affiliated shareholders through either government bureaucratic agencies or state owned enterprises (SOEs).³ They can only be transferred under authorities' approval at a price close to book value of the firm or auctioned at a heavily discounted value (e.g. Chen, Firth, Xin and Xu, 2008; Huang and Xu, 2009; Hou and Howell, 2011) relative to freely tradable counterparts of the same firm. In either case, these shares are still untradeable after changing hands.

To further reform the capital market, the Chinese government is keen to abolish this approach. On 29th April 2005, the China Securities Regulatory Commission (CSRC)

announced its policy intention to implement the conversion of restricted shares into freely-traded shares, which will be carried out gradually through selected batches of firms until it is enacted across all listed firms in China. Two initial batches of firms were first selected on 9th May and 19th June 2005 for piloting. On 4th September 2005, the official documents named *Administration Measures for the Split Share Structure Reform of Listed Firms* providing implementation procedures were officially released, giving clear and detailed instructions to the inception of the full market-wide reform from 12th September 2005 onward.

When a firm is selected to carry out the reform, it begins a gradual process that starts with the negotiation of a compensation payout plan with existing freely tradable shareholders (e.g. Firth et al. 2010; Li et al. 2011). Restricted shares paid out as part of the compensation to existing freely tradable shareholders becomes immediately tradable. Over the next 36 months, the proportion of restricted shares becomes increasing tradable. All restricted shares become fully tradable in the stock market 36 months after the ratification of the compensation payout plan. By the end of 2008 most Chinese listed firms have completed their compensation payout plan ratifications and began enacting the gradual release of their restricted shares, and these firms will no longer have restricted shares around the end of 2011.

2.4 Hypotheses development

Prior to the Split Share Structure Reform of 2005, this state ownership is maintained through restricted shares. This insulates state shareholders of the wealth implications of the

stock return performance of their firms. As a result, state shareholders are more interested in pursuing political credits acquired when their firm carries out government initiatives or by cash dividends payouts should the firm achieve certain operating performance targets. However, the government initiatives may not necessarily be in the interest of minority shareholders and operating performance could be achieved through earnings management. Thus, the split share structure tilts the effect of state ownership concentration on Chinese listed firms away from incentive alignment and toward entrenchment, which causes adverse effect to the governance of Chinese listed firms. For instance, empirical studies show that executive pay in state-controlled firms is not sensitive to share returns (Firth et al. 2006) and that restricted shareholders prefers cash over stock dividends (Wei and Xiao, 2009).

The Split Share Structure Reform induces an exogenous alignment of incentives between state and private shareholders of Chinese listed firms. It renders the wealth of state shareholders sensitive to share return performance in the capital market as their private shareholder counterparts. This reduction the existing conflict of interest between the two shareholders groups is expected to strengthen their joint effort to ensure managers maximize the market value of the firm. To achieve this, they must strengthen corporate governance and reduce opportunity of managers to expropriate wealth from the firm at the expense of outside investors. This in turn reduces the incentive and need of managers and controlling owners to withhold and/or manipulate price sensitive information. This effect should be more

pronounced among firms with higher state ownership or restricted shares. Given these aforementioned arguments, we test the following two hypotheses:

H₁: Prior to the Split Share Structure Reform, Chinese listed firms with more state ownership or restricted shares have lower share price informativeness.

H₂: Following the Split Share Structure Reform, Chinese listed firms with more state ownership or restricted shares are associated with greater increase in share price informativeness.

One possible critique against our hypothesis H_2 is that despite of the trading restrictions being lifted, state shareholders will still not sell their shares due to government pressure not to relinquish state control of listed firms. If this is the case, the reform leads to limited incentive alignment effect. However, there are four main counter-arguments to this specific critique. First, the Chinese government has an well-established policy known as “*Zhua Da Fang Xiao*” (or literally “grasp big and release small”), which calls for gradual focus of its control only on listed firms of strategically vital sectors (e.g. energy, transportation, defence, etc) and encourages the relaxation of its involvement in less important businesses.⁴ In fact, Chen, Firth, Xin, and Xu (2008) document 62 control transfers of listed firms from state shareholders to private ones from 1996 to 2000, which is prior to the reform. Second, there are many anecdotal evidence from the media suggesting that previously restricted shares held by state shareholders have been actively traded in the stock market following this reform.⁵ Third,

even state shareholders who do not sell their shares immediately after trading is allowed can have incentives to see the increase of their firms' market value. Such shareholders could be holding on to the shares because they see long-term growth prospect of their firms' market value and are therefore willing to contribute their influence to ensure this expectation can be realized. Fourth, the corporate governance benefit of this reform that we predict is directly achieved through the alignment of incentives between state and private shareholders and is not dependent on the change in ownership structure from state to private shareholders.

Another potential critique of our hypothesis H_2 is that the incentive alignment effect does not occur before all restricted shares of a firm become fully tradable, which will be 36 months after the ratification of the compensation plan in the reform process. Based on this argument, it is only possible to study the effect of the reform across all firms in the Chinese stock market using a post-2011 sample. However, this argument is based on the narrow assumption that all restricted shareholders are myopic and could not plan ahead. The CSRC's policy announcement, piloting, and guideline issuing during 2005 already made clear the government's intention to proliferate the reform subsequently across all Chinese listed firms. It would be in the best interest of the restricted shareholders to influence and increase their firms' market value before their restricted shares are eligible for trading so that they can maximise their profit whenever they want to do so after the trading becomes allowed. In addition, restricted shareholders with less than 5% of the total outstanding shares can trade after 12

months horizon, and these with 5% or more can still trade shares equivalent to 5% of the outstanding shares between the 12 to 24 month horizon, and 10% between the 24 to 36 month horizon (see Cumming and Hou, 2012). Thus, the argument that incentive alignment occurs only after this horizon neglects the wealth implication of to the partially released trading constraints over this period.

Finally, one confounding effect that may influence part of post-reform period is the mandatory convergence of the Chinese accounting standard toward the International Financial Reporting Standards (IFRS) from 2007 onward. If IFRS indeed strengthens Chinese listed firms' accounting quality, then this may also improve firm-specific disclosure and information environment. However, an international study across 51 countries including China by Daske, Hail, Leuz, and Verdi (2008) reveals that IFRS effect only in countries where firms have incentives to be transparent and where legal enforcement is strong. Thus, given the consensus in the literature that China has weak investor protection and legal enforcement, its mandatory IFRS adoption is not expected to have immediate and systematic impact on listed firms (e.g. Chen and Cheng, 2007). Indeed, He, Wong, and Young (2009) provide empirical evidence that the mandatory adoption of IFRS did not improve the earnings quality of Chinese firms. Their result reduces the possibility that the evidence we find in support of our prediction in hypothesis H2 is attributed to the IFRS mandatory adoption instead of the Split Share Structure Reform. As further robustness check, we also replicate our analyses by excluding the

time period in which mandatory IFRS adoption would affect share price of Chinese listed firms and find consistent results (see Section 4.2.4).

3. Methodology and sample

3.1 Test of Hypotheses

Existing literature (e.g. Roll, 1988) suggest that the proportion of stock return variations not attributed to market-wide information indicates the rate in which private information is impounded into the stock prices through trading. Firm-specific return variation has been widely adopted in the literature as a proxy of share price informativeness to examine corporate transparency.⁶ We carry out the empirical tests of hypotheses H_1 and H_1 , through regressions of Equation 1 below:

$$\begin{aligned} \psi_{i,t} = & \alpha_0 + \alpha_1 \text{RATIO}_{i,t} + \alpha_2 \text{SSSR}_{i,t} + \alpha_3 \text{RATIO}_{i,t} \times \text{SSSR}_{i,t} \\ & + \alpha_4 \ln(\text{Size}_{i,t}) + \alpha_5 \text{MB}_{i,t} + \alpha_6 \text{LEV}_{i,t} + \alpha_7 \text{IROA}_{i,t} + \alpha_8 \text{VOL}_{i,t} \\ & + \alpha_9 \text{CHOLD}_{i,t} + \alpha_{11} \text{CDUAL}_{i,t} + \alpha_{12} \text{BINDP}_{i,t} + \alpha_{13} \text{BSIZE}_{i,t} \\ & + \text{Industry} + \text{Area} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

The dependent variable $\psi_{i,t}$ is share price informativeness measure of firm i in year t derived either only from the Chinese domestic stock market returns or both the Chinese domestic and U.S. stock market returns by following Fernandes and Ferreira (2008). The latter captures return variations due to market-wide information in the U.S., where the export of Chinese firms have high degree of dependence. To identify firms with greater sensitivity to the reform, we define $\text{RATIO}_{i,t}$ either as state to total share ratio (*STATE*) or restricted to total share ratio (*RESTRICT*).⁷ To capture the impact of the reform, we define $\text{SSSR}_{i,t}$ as 1 for years from

2006 onward and 0 otherwise. As we discussed in Sections 2.3 and 2.4, the CSRC's policy announcement, piloting, and guideline issuing over 2005 should already sent clear signals to the market about the impending reform across all listed firms. Assuming state shareholders are forward-looking and not myopic, these market-wide signals should start to invoke the incentives alignment effect between them and the private shareholders from 2006 onward even among firms that are not immediately selected by CRSC to implement the reform procedure. As part of our robustness test, we replicate our analyses by substituting $SSSR_{i,t}$ with another variable designated as $REFORM_{i,t}$, which equals 1 from the year in which firm i is selected to begin the reform procedure and 0 otherwise. The $SSSR_{i,t}$ variable captures market-wide effect from 2006 onward while $REFORM_{i,t}$ variable captures firm-specific effect from the year a firm is chosen to implement the process. We include control variables broadly similar to Gul et al. (2010).⁸ $SIZE_{i,t}$ is the market capitalization of the firm. $MB_{i,t}$ is measured as market-to-book ratio, $LEV_{i,t}$ is measured as debt-to-total asset ratio. $IROA_{i,t}$ is the industry median adjusted return on asset, measured by operating income divided by total asset. $VOL_{i,t}$ is trading volume measured as turnover, which is the number of shares traded as a percentage of the total tradable shares. We further include corporate governance variables for controls following its link with firm transparency as established in Section 2.2. $CHOLD_{i,t}$ is 1 for firms with CEO shareholding in yearly cross-sectional top or bottom 25th percentile and 0 otherwise. Low CEO ownership reduces incentive alignment with shareholders and high CEO ownership induces

entrenchment. Thus, both effects increase agency problems. $CDUAL_{i,t}$ is 1 for firms with CEO also serving as board chairman and 0 otherwise. CEOs that also serve as chairman of the board have power to reduce the effectiveness of board monitoring against them. $BINDP_{i,t}$ is 1 for firms with proportion of independent directors above yearly cross-sectional median and 0 otherwise. Independent shareholders are assumed to have more incentive and expertise to monitor managers. $BSIZE_{i,t}$ is 1 for firms with board size above yearly cross-sectional median and 0 otherwise. Finally, *Industry* and *Area* are industry and regional effects. We define industry according to first two digits of GICS (Global Industry Classification Standard) codes. We define region based on Firth et al., (2006), which groups firms into four different regions based on economic develop level.⁹ For brevity we do not report the coefficients of the 10 industry dummy variables and 3 regional dummy variables that are estimated from our regression analyses in the tables.

Coefficient α_1 indicates the relationship between share price informativeness and firms that are assumed to have greater conflict of interest between dominant and minority shareholders before the reform. Given the argument that state ownership and restricted shares reduce corporate governance, which in turn reduces corporate transparency, we expect $\alpha_1 < 0$. This finding would confirm our prediction in the H_1 hypothesis and would also be broadly similar to the findings of Gul et al. (2010), which shows that firms with more government ownership have lower share price informativeness. Coefficient α_3 indicates the incremental

relationship after the reform between share price informativeness and firms that are assumed to be more sensitive to the abolishment of restricted shares. To confirm the prediction of our hypothesis H_1 , we must observe $\alpha_3 > 0$. This will indicate incrementally higher share price informativeness following the reform among firms with either higher state ownership or proportion of restricted shares, which we argue are more sensitive to the abolishment of the split share structure. Consistent inference drawn from combinations of alternative share price informativeness measures as well as our control variables will strengthen the robustness of our findings.

By following Fernandes et al. (2008), for each firm i , we estimate stock price informativeness for the year t from a time-series regression of the 52 firm-specific weekly excess returns on the corresponding weekly excess returns of different market portfolios:

$$r_{i,t} = \beta_0 + \beta_1 rm_t^{CN} + \varepsilon_{i,t} \quad (2)$$

$$r_{i,t} = \beta_0 + \beta_1 rm_t^{CN} + \beta_2 rm_t^{US} + \varepsilon_{i,t} \quad (3)$$

where $r_{i,t}$ is the weekly stock return of firm i in week t minus 7-day interbank offered rate in China, which is a proxy of the risk-free rate; rm_t^{CN} is the weekly return of Shanghai Composite Index minus 7-day interbank rate in China; rm_t^{US} is the weekly excess return of US stock markets, which is calculated as the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate (from Ibbotson Associates). Equation 2 considers systematic stock returns of the Chinese stock market index. Equation 3 follows Fernandes et al. (2008) to further

account for systematic stock returns of the US market. Since US is China's largest trading partner, it makes sense to account for this source of stock return variation. Each firm-specific time-series regression produces a goodness-of-fit measure ($R_{i,t}^2$). We then compute relative firm-specific return variation as the ratio of idiosyncratic volatility to total volatility, which is precisely equivalent to $1 - R_{i,t}^2$. Following Fernandes et al. (2008), we conduct our test using a logistic transformation of $1 - R_{i,t}^2$:

$$\psi_{i,t} = \log\left(\frac{1 - R_{i,t}^2}{R_{i,t}^2}\right) \quad (4)$$

Our dependent variable $\Psi_{i,t}$ therefore measures firm-specific stock return variation relative to marketwide variation. We denote the stock price informativeness measures based on the $R_{i,t}^2$ derived from Equations 2 and 3 as Ψ_1 and Ψ_2 respectively.

As robustness tests, we also replicate our hypotheses tests based on share price informativeness estimated from daily returns using Equation (2) and (3) as well as alternative model specifications that accounts for systematic stock return variations of industry indices ($rind_t$), MSCI (Morgan Stanley Capital International) World Index (rm_t^W), as well as Chinese A (rm_t^{CNA}), B (rm_t^{CNB}) and H (rm_t^{CNH}) share indices as in Gul et al. (2010)¹⁰:

$$r_{i,t} = \beta_0 + \beta_1 rm_t^{CNA} + \beta_2 rm_{t-1}^{CNA} + \beta_3 rind_t + \beta_4 rind_{t-1} + \varepsilon_{i,t} \quad (5)$$

$$r_{i,t} = \beta_0 + \beta_1 rm_t^{CNA} + \beta_2 rm_t^W + \varepsilon_{i,t} \quad (6a)$$

$$r_{i,t} = \beta_0 + \beta_1 rm_t^{CNA} + \beta_2 rm_t^{CNB} + \beta_3 rm_t^W + \varepsilon_{i,t} \quad (6b)$$

$$r_{i,t} = \beta_0 + \beta_1 rm_t^{CNA} + \beta_2 rm_t^{CNH} + \beta_3 rm_t^W + \varepsilon_{i,t} \quad (6c)$$

3.2 Sample Description, Summary Statistics, and Correlation Analyses

The sample period of our analyses spans from 2001 to 2008. From GTA (Guo Tai An)/ CSMAR (China Stock Market and Accounting Research) and CCER (China Center of Economic Research) we obtain variables including stock returns, proportion of state shares, proportion of restricted shares, market capitalization, market-to-book value, debt-to-equity ratio, return on asset ratio, trading volume, CEO ownership, CEO duality, number of outside directors, board size, as well as industrial and regional classifications. We obtain weekly returns of Chinese domestic market from Datastream and the U.S. stock market from CRSP (Center for Research in Security Prices). We winsorize the top and bottom 1 percentile of these variables to reduce the impact of outliers. We include all listed firms in both Shanghai and Shenzhen stock exchanges. We exclude newly listed firms after the reform was launched at the end of 2005 since they no longer adopt a split share structure. Our final sample requires all the aforementioned variables to have valid values, and has 9,871 firm-year observations. Within our sample, the number of firms selected by the CSRC to carry out the reform and have their compensation payout plan ratified by shareholders in 2005, 2006, 2007, and 2008 are 224, 894, 103, and 16 respectively.

Table 1 Panel A indicates the number of firms per year in our sample, which covers the period from 2001 to 2008. Table 1 Panel B presents the summary statistics of these variables used in our analyses. The two share price informativeness measures Ψ_1 and Ψ_2 we use in our analysis have median of 1.9523 and 1.7048 respectively over the sample period.

Following Fernandes et al. (2008), the value of these measures are logistic transformed firm-specific return variation relative to market-wide return variation (see Equation 4). Since Ψ_1 accounts only for the domestic Chinese market information, it is higher than Ψ_2 , which accounts additionally for the market-wide information in U.S. as well. The median level of *STATE*, which is the proportion of shares held by state affiliated shareholders but excluding legal person shares, is 0.3406, which is broadly similar to Gul et al. (2010) despite the difference between our sample period and theirs. This indicates that the level influence of the state on Chinese listed firms had not changed through time. The median level of restricted shares *RESTRICT* is 0.5662, which is higher than *STATE* since it also contains legal person shares. They have a median market-to-book ratio of 2.5697 and volume of 3.375, which are both higher than the earlier sample period used in Gul et al. (2010) and reflects the growth of the Chinese economy and stock market trading activity. Table 1 also reports the summary statistics of the underlying variable we use to construct our corporate governance control variables, i.e. *CHOLD*, *CDUAL*, *BINDP*, and *BSIZE*. The average CEO ownership is 0.19% with over 75% of firms having no executive shareholding (See Conyon and He, 2008). Only 1 % of firms have CEO serving as chairperson of the board. On the average, independent directors account for 47.58% of the board and the average board has 7 directors.

< Insert Table 1 here >

For brevity, we do not tabulate and only summarize the main results from the bivariate correlation analyses of the variables used in our study. The share price

informativeness measures (Ψ_1 and Ψ_2) are negatively correlated with state ownership (*STATE*), firm size (*lnSIZE*), and extreme managerial shareholding (*CHOLD*). Firms with more state influence enjoy more financial support from the government and thus have less incentive to communicate with outside investors. Larger firms have less firm-specific variations since they contribute more to market returns in emerging market such as China (Gul et al. 2010). Firms are less likely to be transparent when their managers have less incentive alignment and more entrenchment. The share price informativeness measures are positively correlated with growth opportunities (*MB*) and leverage (*LEV*). Firms with higher growth opportunities or more borrowing may volunteer to release more information to attract equity investors.

4. Empirical findings

4.1 Main Tests of Hypotheses

Table 2 presents the multivariate regression analyses using state shares to total shares ratio to identify firms more sensitive to the reform. Panels A and B use Ψ_1 and Ψ_2 respectively as dependent variables. In each panel, Regression 1 (2) implements Equation 1 excluding (including) the control of industry and regional effects. Regression 3 implements Equation 1 using bootstrapped median regression to further control against the influence of outliers. Across all regressions in both panels, notice that the coefficient pertaining to *STATE* is significantly negative. This indicates that the firms with higher state to total shares indeed have lower share price informativeness during the time period before the Split Share Structure

Reform, which in our case is 2001 to 2005. This finding confirms our prediction in hypothesis H_1 and is broadly similar to the finding of Gul et al. (2010), which is based on an earlier period of 1996 to 2003. It suggests that higher state ownership firms indeed have poorer information environment prior to the reforms.

< Insert Table 2 here >

To the extent that the use of restricted shares to maintain state ownership contributes toward this low corporate transparency, we expect to observe an improvement of information environment following the Split Share Structure Reform. To draw such an inference, we need to observe significantly greater improvement among the firms that are more sensitive to the reform relative to the firms that are not. Indeed, notice in both Panels A and B that the coefficients of the interaction term between *STATE* and *SSSR* are significantly positive. This indicates incrementally higher increase in share price informativeness among firms that have higher state ownership. This finding confirms our prediction in hypothesis H_2 and suggests that abolishing restricted shares indeed leads to greater improvement of corporate transparency in Chinese listed firms. As robustness check, we also replicated our tests by replacing the state ownership variable (*STATE*) with a dummy variable indicating 1 for firms with state ownership higher than 30% and 0 otherwise, and obtained similar results in support of our hypotheses.

Our results in Table 2 is robust to alternative measures of share price informativeness as well as controls of firm size, growth opportunity, leverage, profitability, trading volume,

corporate governance variables, as well as industry and regional effects. Consistent with untabulated results of the bivariate correlation analyses, Table 2 shows that share price informativeness measures (dependent variables) have significantly negative relationship with state ownership (*STATE*) and firm size (*lnSIZE*) and have significantly positive relationship with growth opportunities (*MB*) and leverage (*LEV*). In addition, Table 2 also shows that share price informativeness measures have significantly positive relationship with profitability (*IROA*) and board independence (*BINDP*). The former is consistent with more profitable firms having less need to manipulate earnings and the latter is consistent with independent directors being more effective in promoting corporate transparency.

Table 3 uses the proportion of restricted shares to total shares to identify firms more sensitive to the reform for our tests. This provides a further robustness test to our findings of Table 2 based on the proportion of state ownership. Notice throughout Table 3 that the coefficient pertaining to *RESTRICT* is significantly negative, which indicate that firms with more restricted shares indeed have weaker information environment prior to the reform and again confirms our H_1 hypothesis. The coefficients of interaction term between *RESTRICT* and *SSSR* are all significantly positive, which indicates that firms more sensitive to the impact of the reform are indeed associated with more share price informativeness following the reform. Since the Split Share Structure Reform is directly relevant to restricted shares, our finding in Table 3 provides further evidence in favor of our prediction in hypothesis H_2 . Firms with

higher proportion of restricted shares are likely to experience greater reduction in the conflict of interest between shareholder of restricted and tradable shares. Our findings in Table 3 are also robust to the control of firm characteristics, corporate governance, both industry and regional effects (Regression 2), and bootstrapped median regressions (Regression 3).

< Insert Table 3 here >

4.2 Robustness checks

4.2.1 Alternative model specification and daily returns

Tables 4 and 5 replicate our analyses in both Tables 2 and 3 using share price informativeness measures estimated from alternative model specifications (see Section 3.1) using daily returns. In Regression 1 the share price informativeness measure accounts for daily returns of market portfolio based on all A shares in both Shanghai and Shenzhen exchanges (Equation 2). In Regressions 2, the measure also accounts for daily returns of US market (Equation 3). In Regression 3, the measure accounts for industry-wide return variations (Equation 5) following Gul et al. (2010). In Regression 4, we estimate share price informativeness using Equations 6a, 6b, and 6c for Chinese listed firms that issues pure A shares, B shares, and H shares respectively. In both Tables 4 and 5, the coefficients for *STATE* and *RESTRICT* are consistently negatively significant, which supports our hypothesis H_1 . Throughout Table 4 (5) the coefficient pertaining to the interactive term between *STATE* (*RESTRICT*) and *SSSR* are both significantly positive, which support our H_2 . This suggests that our findings in support of both hypotheses are not sensitive to alternative model

specifications or data frequencies used to estimate share price informativeness.

< Insert Tables 4 and 5 here >

4.2.2 Excluding reform selection year

Table 6 replicates the tests in both Tables 2 and 3 by excluding firm observations for the first year they were selected to implement the reform (Regressions 2 and 4 are based on bootstrapped median regression). Although the Chinese government finalized its intention at the end of 2005 to enact the Split Share Structure Reform throughout the entire stock market, individual firms were selected in batches to carry out the implementation (see Section 2.3 for details of reform process). The reason we exclude this first year is because the news regarding the proposed compensation scheme and its process of negotiation and voting may provide firm-specific information that could be captured by our share price informativeness measure. Since this has nothing to do with the voluntary improvement of corporate transparency, if our findings in Tables 2 and 3 were driven by changes in share price informativeness in this first year of implementation, then we would wrongly infer that the reform improved information environment from our results. Across Table 6, we observe that firms with higher state or restricted to total shares ratio are associated with significantly lower share price informativeness before the reform and greater increase in share price informativeness after the reform, which confirms the predictions in both of our hypotheses. This ensures that our findings of greater share price informativeness are not driven by firm-specific news associated with the compensation negotiation process that has nothing to do with firm voluntary

disclosure.

< Insert Table 6 here >

4.2.3 Firm-specific reform effect

Table 7 replicates the analyses in both Tables 2 and 3 by defining the reform period based on firm-specific starting year when they are actually chosen to begin the process (Regressions 2 and 4 are based on bootstrapped median regression). As we argue earlier, the alignment of interest between state or private shareholders to ensure managers maximize the market value of their firm should already begin 2006 onward when the Chinese government made clear its decision that the restricted shares will be abolished. The State Council announced “*The key tasks of the State Council in 2006*” on 19 March 2006 to set an explicit timeline and requires the reform to be generally completed by the end of 2006. Knowing that all trading restrictions of their shares will be lifted in due course, state shareholders can begin to step up their demand for managers to focus more on share return performance during the expectation period even before the actual implementation process commence since it takes time to adjust corporate strategy and make business decision (see Section 2.4 for detailed discussion). However, to ensure our finding that improved corporate transparency persist after each firm have been chosen to enact the reform process, we replace the market-level variable *SSSR* with firm-level variable *REFORM*. We assign this variable to 1 for the year in which the chosen firm in the reform has delivered the compensation following and the years afterwards, and 0 otherwise. Across Table 7, we draw similar inferences to Tables 2 and 3 that firms more

sensitive to the impact of the reform are associated with significantly greater improvement in corporate transparency measured by share price informativeness. This suggests that the increase of information disclosure is not limited to the market-level or firm-level measure of the reform.

< Insert Table 7 here >

4.2.4 Excluding IFRS period

Table 8 replicates the tests in Tables 7 by excluding the time period in which mandatory IFRS could affect share prices movement of Chinese listed firms. China enacted IFRS across all listed firms for fiscal year 2007. Since all Chinese firms have fiscal year ending in December, we assume that their annual reports will not be available to investors until March 2008 and only after that will changes in the accounting standards have the potential to influence the share price of Chinese listed firms. As indicated in Table 8, after excluding 2008 from our sample, we acquire results that are consistent with our findings in Tables 2 and 3. This suggests that findings in support of our hypothesis H_2 are not due to the introduction of IFRS.

< Insert Table 8 here >

5. Conclusion

We show that the Split Share Structure Reform increased share price informativeness of Chinese listed firms, especially those with higher state ownership and restricted shares. Improved corporate transparency is expected to reduce the cost of equity capital of these firms,

which also reduce their dependence on the government's financial support. Future researches could also look into the effect of this reform on other restricted shareholders that are not affiliated to the state.¹¹ For instance, how influential are these shareholders in the corporate governance of Chinese listed firms? What is the impact of this reform on their shareholdings? While these are research questions beyond the scope of this study, they are worthwhile to explore given the uniqueness of the institutional setting China.

Notes:

1. In 2007, China imposed mandatory adoption of the International Financial Reporting Standards (IFRS) on all listed firms. As robustness check, we exclude the time period in which IFRS is expected to influence share price movement and acquired similar results in support to our main inference of the Split Share Structure Reform effect (see Section 4.2.4).

2. The literature also suggests that better corporate information environment in turn improves the ability of outside investors to discipline insiders through share price and/or efficient contracting (e.g. Bushman and Smith, 2001)

3. Private investors can also hold legal person shares.

4. For instance, this policy has been laid out in the *Ninth Five-Year Plan for National Economic and Social Development and the Outline for the Long-Range Objective Through the Year 2010*.

5. We list a few recent financial news articles here by translating their Chinese language headlines into English language and provide their web link for reference:

- “29 firms this year experienced local government stock ownership reduction”
<http://finance.ifeng.com/stock/zqyw/20110827/4474686.shtml>
- “Selling shares – July wave of government stock ownership reduction wave”
<http://stock.hexun.com/2011-07-29/131890710.html>
- “Local government July stock ownership reduction in 25 listed firms to cash in 3.3billion RMB”
<http://www.beelink.com/20110808/2808514.shtml>

6. Some recent studies include Morck, Yeung, Yu. (2000), Durnev, Morck, Yeung, & Zarowin (2003), Jin and Myers (2006), Fernandes and Ferreria (2008), and Gul et al. (2010)

7. In calculating state to total share ratio we exclude state ownership held via legal person shares.

8. Gul et al (2010) also tests the effect of foreign shareholding and ownership concentration to the share price informativeness of Chinese listed firms. In untabulated tests we include these variables as additional control variables and all our findings remains robust. However, due to data availability these variables reduce our sample size so we choose not to include them in our main analyses.

9. These include: 1. Shanghai and Shenzhen; 2. More developed areas including open cities and provinces along the coast; 3. Inland provinces; 4. Least developed area in the north-western regions.

10. Majority of shares in Shanghai and Shenzhen stock exchanges are traded in RMB and known as A shares. However, some Chinese listed firms also issue shares traded in US\$ (in Shanghai Stock Exchange) and HK\$ (in Shenzhen Stock Exchange) and this are known as B shares. Shares of Chinese firms traded in Hong Kong stock exchange and in HK\$ are known as H shares.

11. We thank the referee for suggesting this.

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TABLE 1: Sample and summary statistic

Panel A Annual number of firm-year observations								
2001	2002	2003	2004	2005	2006	2007	2008	Total
1,044	1,123	1,207	1,320	1,324	1,316	1,272	1,265	9,871
Panel B Summary statistics								
Variables	Observations	Mean	Standard deviation	25 th percentile	50 th percentile	75 th percentile		
Ψ_1	9871	2.3677	1.5891	1.3300	1.9523	2.9037		
Ψ_2	9871	1.9627	1.1493	1.1590	1.7048	2.5126		
<i>STATE</i>	9871	0.3181	0.2508	0.0142	0.3406	0.5360		
<i>RESTRICT</i>	9871	0.5352	0.1627	0.4377	0.5662	0.6546		
<i>lnSIZE</i>	9871	20.5602	1.0001	19.8700	20.4545	21.1187		
<i>MB</i>	9871	3.6669	4.0470	1.7092	2.5697	4.2672		
<i>LEV</i>	9871	0.5183	0.2641	0.3626	0.5047	0.6326		
<i>IROA</i>	9871	-0.0014	0.0196	-0.0048	0.0001	0.0068		
<i>VOL</i>	9871	4.5726	3.5506	1.9639	3.3750	6.0372		
CEO ownership	9871	0.0019	0.0161	0.0000	0.0000	0.0000		
CEO duality	9871	0.0100	0.0996	0.0000	0.0000	0.0000		
Board independence	9871	0.4758	0.2172	0.4000	0.5000	0.5714		
Board size	9871	6.7337	2.0049	6	6	8		

The table presents our sample and summary statistics. Our sample covers Chinese listed firms over 2001-2008. We exclude the firms listed after the launch of the Split Share Structure Reform (2006 onwards) because trading constraints are no longer imposed on them, and they are not affected by the reform anyway. Ψ_1 (Ψ_2) is share price informativeness measure derived from residual variances of time-series regressions of firm-specific weekly excess returns on Chinese (both Chinese and US) stock market weekly excess returns. *STATE* (*RESTRICT*) is with the ratio of state shares (restricted shares) relative to the total shares of the listed firm. *lnSIZE* is natural log of market capitalization. *MB* is market-to-book value. *LEV* is debt-to-total asset ratio. *IROA* is industry median adjusted return on asset measured as operating income divided by total asset. *VOL* is trading volume measured as turnover. CEO ownership is number of shares held by CEO divided by total number of shares. CEO duality is 1 for firms with CEO also serving as chairperson of the board. Board independence is the number of independent directors relative to the total number of directors in the board. Board size is the number of directors on the board.

TABLE 2: Regression analyses using state to total shares ratio

	Panel A: Ψ_1									Panel B: Ψ_2								
	Regression 1			Regression 2			Regression 3			Regression 1			Regression 2			Regression 3		
Intercept	13.3195	(34.79)	***	13.2048	(25.18)	***	11.0631	(18.34)	***	9.5259	(34.55)	***	9.4730	(28.11)	***	8.5891	(14.13)	***
<i>STATE</i>	-0.2375	(-3.07)	***	-0.1821	(-2.36)	**	-0.1670	(-2.91)	***	-0.1640	(-2.86)	***	-0.1224	(-2.15)	**	-0.1457	(-2.38)	**
<i>SSSR</i>	0.9865	(16.66)	***	0.985	(16.47)	***	0.6070	(12.06)	***	0.4779	(11.43)	***	0.4742	(11.26)	***	0.2484	(3.73)	***
<i>STATE</i> × <i>SSSR</i>	0.5742	(4.60)	***	0.5824	(4.67)	***	0.4737	(5.58)	***	0.5163	(5.79)	***	0.5264	(5.92)	***	0.5590	(5.45)	***
<i>lnSIZE</i>	-0.5496	(-28.81)	***	-0.5453	(-28.32)	***	-0.4367	(-28.98)	***	-0.3769	(-27.19)	***	-0.3719	(-26.56)	***	-0.3328	(-16.52)	***
<i>MB</i>	0.0098	(2.33)	**	0.0073	(1.70)	*	0.0049	(1.14)		0.0046	(1.49)		0.0026	(0.85)		0.0057	(1.32)	
<i>LEV</i>	0.4584	(6.77)	***	0.4710	(6.95)	***	0.5331	(7.47)	***	0.2744	(5.71)	***	0.2830	(5.83)	***	0.3426	(5.02)	***
<i>IROA</i>	3.3035	(3.23)	***	3.2049	(3.13)	***	3.3635	(4.37)	***	2.6409	(3.62)	***	2.5475	(3.47)	***	2.9834	(4.14)	***
<i>VOL</i>	-0.0686	(-13.50)	***	-0.0677	(-13.27)	***	-0.0435	(-10.23)	***	-0.0407	(-10.91)	***	-0.0399	(-10.69)	***	-0.0291	(-9.68)	***
<i>CHOLD</i>	0.0225	(0.64)		0.0148	(0.43)		0.0169	(0.58)		0.0290	(1.10)		0.0250	(0.97)		0.0062	(0.28)	***
<i>CDUAL</i>	-0.1707	(-1.26)		-0.1926	(-1.40)		-0.1542	(-0.97)		-0.0848	(-0.79)		-0.1031	(-0.96)		-0.1297	(-1.05)	
<i>BINDP</i>	0.1529	(3.53)	***	0.1607	(3.74)	***	0.1166	(4.00)	***	0.1385	(4.45)	***	0.1453	(4.71)	***	0.1265	(3.91)	***
<i>BSIZE</i>	-0.0047	(-0.14)		0.0021	(0.06)		0.0271	(0.94)		0.0099	(0.39)		0.0146	(0.58)		0.0113	(0.43)	
Industry effect	No			Yes			Yes			No			Yes			Yes		
Region effect	No			Yes			Yes			No			Yes			Yes		
BSQREG	No			No			Yes			No			No			Yes		
Adjusted R ²	0.138			0.1414						0.1086			0.1122					
Pseudo R ²							0.0737									0.0594		
Observations	9871			9871			9871			9871			9871			9871		

The table presents regression analyses. Our sample covers Chinese listed firms over 2001-2008. We exclude the firms listed after the launch of the Split Share Structure Reform (2006 onwards) because trading constraints are no longer imposed on them, and they are not affected by the reform anyway. The dependent variable in Panel A (B) is share price

informativeness measure Ψ_1 (Ψ_2) derived from residual variances of time-series regressions of firm-specific weekly excess returns on Chinese (both Chinese and US) stock market weekly excess returns. *STATE* is the ratio of state shares relative to the total shares of the listed firm. *SSSR* is 1 for years from 2006 onward and 0 otherwise. *lnSIZE* is natural log of market capitalization. *MB* is market-to-book value. *LEV* is debt-to-total asset ratio. *IROA* is industry median adjusted return on asset measured as operating income divided by total asset. *VOL* is trading volume measured as turnover. *CHOLD* is 1 for firms with CEO shareholding in yearly cross-sectional top or bottom 25 percentile and 0 otherwise. *CDUAL* is 1 for firms with CEO also serving as board chairman and 0 otherwise. *BINDP* is 1 for firms with proportion of independent directors above yearly cross-sectional median and 0 otherwise. *BSIZE* is 1 for firms with board size above yearly cross-sectional median and 0 otherwise. Industry effect and Region effect indicate whether these effects are controlled in the analyses. The industry classification is based on the first two digits of GICS (Global Industry Classification Standard) codes. The region classification is based on Firth et al. (2006), which groups firms into four regions based on the levels of economic development: 1. Shanghai and Shenzhen; 2. The more developed regions including open cities and provinces along the coast; 3. The inland provinces; 4. The least developed area in the north-western part of the country. For brevity we do not report the coefficient of the 10 industry dummy variables and 3 regional dummy variables. Regression 1 (2) exclude (include) the control of industry and regional effects and reports adjusted R^2 . Regression 3 uses bootstrapped median regression (BSQREG) and reports pseudo R^2 . All t-statistics are reported in parentheses. The t-statistics for Regressions 1 and 2 are adjusted for firm clustering. *, **, and *** indicates significance to 10%, 5%, and 1% level respectively.

TABLE 3: Regression analyses using restricted to total shares ratio

	Panel A: Ψ_1						Panel B: Ψ_2					
	Regression 1		Regression 2		Regression 3		Regression 1		Regression 2		Regression 3	
Intercept	13.0626	(32.16) ***	12.8234	(23.49) ***	10.8757	(23.86) ***	9.2675	(32.18) ***	9.0752	(26.20) ***	8.2169	(16.04) ***
<i>RESTRICT</i>	-0.4566	(-2.83) ***	-0.3862	(-2.42) **	-0.3525	(-2.89) ***	-0.3456	(-2.80) ***	-0.2887	(-2.38) **	-0.2941	(-1.76) **
<i>SSSR</i>	0.2832	(2.47) **	0.2927	(2.57) ***	0.1345	(1.11)	-0.1356	(-1.58)	-0.1300	(-1.52)	-0.2246	(-1.96) *
<i>RESTRICT</i> × <i>SSSR</i>	1.8017	(8.68) ***	1.7920	(8.66) ***	1.3569	(7.72) ***	1.5846	(10.34) ***	1.5775	(10.34) ***	1.3767	(8.58) ***
<i>lnSIZE</i>	-0.5267	(-28.03) ***	-0.5178	(-27.13) ***	-0.4151	(-23.28) ***	-0.3561	(-26.15) ***	-0.3474	(-25.02) ***	-0.3121	(-17.25) ***
<i>MB</i>	0.0089	(2.07) **	0.0058	(1.32)	0.0016	(0.71)	0.0034	(1.07)	0.0009	(0.30)	0.0029	(0.77)
<i>LEV</i>	0.4165	(6.00) ***	0.4286	(6.18) ***	0.4812	(5.30) ***	0.2420	(4.92) ***	0.2509	(5.05) ***	0.3325	(6.02) ***
<i>IROA</i>	2.4957	(2.44) **	2.3686	(2.32) **	2.7715	(3.03) ***	1.8920	(2.59) ***	1.7769	(2.42) **	2.1856	(2.98) ***
<i>VOL</i>	-0.0673	(-13.17) ***	-0.0664	(-12.95) ***	-0.0464	(-12.22) ***	-0.0393	(-10.47) ***	-0.0386	(-10.27) ***	-0.0308	(-9.18) ***
<i>CHOLD</i>	0.0402	(1.13)	0.0304	(0.87)	0.0127	(0.33)	0.0443	(1.66) *	0.0387	(1.48)	0.0342	(1.26)
<i>CDUAL</i>	-0.1860	(-1.37)	-0.2099	(-1.53)	-0.1088	(-0.74)	-0.0980	(-0.92)	-0.1177	(-1.10)	-0.1723	(-1.37)
<i>BINDP</i>	0.1420	(3.29) ***	0.1516	(3.53) ***	0.0842	(1.64)	0.1294	(4.17) ***	0.1374	(4.46) ***	0.1194	(4.17) ***
<i>BSIZE</i>	-0.0084	(-0.25)	3.57E-5	(0.00)	0.0125	(0.48)	0.0080	(0.31)	0.0139	(0.55)	0.0151	(0.64)
Industry effect	No		Yes		Yes		No		Yes		Yes	
Region effect	No		Yes		Yes		No		Yes		Yes	
BSQREG	No		No		Yes		No		No		Yes	
Adjusted R ²	0.1447		0.1485				0.1191		0.1232			
Pseudo R ²					0.077						0.0654	
Observations	9871		9871		9871		9871		9871		9871	

The table presents regression analyses. Our sample covers Chinese listed firms over 2001-2008. We exclude the firms listed after the launch of the Split Share Structure Reform (2006

onwards) because trading constraints are no longer imposed on them, and they are not affected by the reform anyway. The dependent variable in Panel A (B) is share price informativeness measure Ψ_1 (Ψ_2) derived from residual variances of time-series regressions of firm-specific weekly excess returns on Chinese (both Chinese and US) stock market weekly excess returns. *RESTRICT* is the ratio of restricted shares relative to the total number of shares of the listed firm. *SSSR* is 1 for years from 2006 onward and 0 otherwise. *lnSIZE* is natural log of market capitalization. *MB* is market-to-book value. *LEV* is debt-to-total asset ratio. *IROA* is industry median adjusted return on asset measured as operating income divided by total asset. *VOL* is trading volume measured as turnover. *CHOLD* is 1 for firms with CEO shareholding in yearly cross-sectional top or bottom 25 percentile and 0 otherwise. *CDUAL* is 1 for firms with CEO also serving as board chairman and 0 otherwise. *BINDP* is 1 for firms with proportion of independent directors above yearly cross-sectional median and 0 otherwise. *BSIZE* is 1 for firms with board size above yearly cross-sectional median and 0 otherwise. Industry effect and Region effect indicate whether these effects are controlled in the analyses. The industry classification is based on the first two digits of GICS (Global Industry Classification Standard) codes. The region classification is based on Firth et al. (2006), which groups firms into four regions based on the levels of economic development: 1. Shanghai and Shenzhen; 2. The more developed regions including open cities and provinces along the coast; 3. The inland provinces; 4. The least developed area in the north-western part of the country. For brevity we do not report the coefficient of the 10 industry dummy variables and 3 regional dummy variables. Regression 1 (2) exclude (include) the control of industry and regional effects and reports adjusted R^2 . Regression 3 uses bootstrapped median regression (BSQREG) and reports pseudo R^2 . All t-statistics are reported in parentheses. The t-statistics for Regressions 1 and 2 are adjusted for firm clustering. *, **, and *** indicates significance to 10%, 5%, and 1% level respectively.

TABLE 4: Robustness tests using state to total shares ratio and share price informativeness estimated from daily stock returns and alternative model specifications

	Ψ_1		Ψ_2		Ψ_3		Ψ_4	
	Regression 1		Regression 2		Regression 3		Regression 4	
Intercept	3.5821	(17.15)***	3.3367	(16.50)***	3.9872	(21.78)***	3.3473	(16.91)***
<i>STATE</i>	-0.2148	(-5.38)***	-0.2126	(-5.45)***	-0.2631	(-7.10)***	-0.2127	(-5.46)***
<i>SSSR</i>	0.2063	(6.47)***	0.1707	(5.52)***	-0.0246	(-0.86)	0.1635	(5.37)***
<i>STATE</i> × <i>SSSR</i>	0.3080	(4.44)***	0.3035	(4.55)***	0.2971	(4.74)***	0.3029	(4.58)***
<i>lnSIZE</i>	-0.1848	(-19.51)***	-0.1739	(-18.97)***	-0.2023	(-24.10)***	-0.1740	(-19.33)***
<i>MB</i>	0.0441	(17.32)***	0.0438	(18.09)***	0.0396	(18.13)***	0.0418	(17.84)***
<i>LEV</i>	0.9351	(21.81)***	0.9027	(22.71)***	0.7506	(21.83)***	0.8815	(22.66)***
<i>IROA</i>	4.2091	(7.36)***	3.9743	(7.30)***	2.9673	(6.05)***	3.9129	(7.31)***
<i>VOL</i>	0.0316	(11.35)***	0.0359	(13.37)***	0.0346	(13.86)***	0.0351	(13.23)***
<i>CHOLD</i>	-0.0279	(-1.58)	-0.0249	(-1.44)	-0.0101	(-0.60)	-0.0218	(-1.26)
<i>CDUAL</i>	0.1235	(1.52)	0.1124	(1.43)	0.1198	(1.63)	0.1015	(1.33)
<i>BINDP</i>	-0.104	(-4.05)***	-0.0955	(-3.84)***	-0.1233	(-5.26)***	-0.1075	(-4.33)***
<i>BSIZE</i>	-0.001	(-0.06)	-0.0014	(-0.08)	-0.0083	(-0.51)	-0.0002	(-0.01)
Industry effect	Yes		Yes		Yes		Yes	
Region effect	Yes		Yes		Yes		Yes	
Adjusted R ²	0.231		0.2325		0.2051		0.2266	
Observations	9863		9863		9863		9863	

The table presents regression analyses. Our sample covers Chinese listed firms over 2001–2008. We exclude the firms listed after the launch of the Split Share Structure Reform (2006 onwards) because trading constraints are no longer imposed on them, and they are not affected by the reform anyway. The dependent variables in Regression 1 to 4 are share price informativeness measures Ψ_1 to Ψ_4 respectively and estimated using daily stock returns. Ψ_1 and Ψ_2 are respectively based on the daily returns estimated by Equation (2) and (3). Ψ_3 accounts for industry-wide return variations (Equation 5) following Gul et al., (2010). Ψ_4 uses Equations 6a, 6b, and 6c for Chinese listed firms that issues pure A shares, B shares, and H shares respectively. *STATE* is the ratio of state shares relative to the total shares of the listed firm. *SSSR* is 1 for years from 2006 onward and 0 otherwise. *lnSIZE* is natural log of market capitalization. *MB* is market-to-book value. *LEV* is debt-to-total asset ratio. *IROA* is industry median adjusted return on asset measured as operating income divided by total asset. *VOL* is trading volume measured as turnover. *CHOLD* is 1 for firms with CEO shareholding in yearly cross-sectional top or bottom 25 percentile and 0 otherwise. *CDUAL* is 1 for firms with CEO also serving as board chairman and 0 otherwise. *BINDP* is 1 for firms with proportion of independent directors above yearly cross-sectional median and 0 otherwise. *BSIZE* is 1 for firms with board size above yearly cross-sectional median and 0 otherwise.

Industry effect and Region effect indicate whether these effects are controlled in the analyses. The industry classification is based on the first two digits of GICS (Global Industry Classification Standard) codes. The region classification is based on Firth et al. (2006), which groups firms into four regions based on the levels of economic development: 1. Shanghai and Shenzhen; 2. The more developed regions including open cities and provinces along the coast; 3. The inland provinces; 4. The least developed area in the north-western part of the country. Regression 1 (2) exclude (include) the control of industry and regional effects and reports adjusted R^2 . For brevity we do not report the coefficient of the 10 industry dummy variables and 3 regional dummy variables. Regression 3 uses bootstrapped median regression (BSQREG) and reports pseudo R^2 . All t-statistics are reported in parentheses. The t-statistics for Regressions 1 and 2 are adjusted for firm clustering. *, **, and *** indicates significance to 10%, 5%, and 1% level respectively.

TABLE 5: Robustness tests using restricted to total shares ratio and share price informativeness estimated from daily stock returns and alternative model specifications

	Ψ_1		Ψ_2		Ψ_3		Ψ_4	
	Regression 1		Regression 2		Regression 3		Regression 4	
Intercept	3.4031	(14.89) ***	3.1641	(14.26) ***	4.0270	(19.83) ***	3.1610	(14.56) ***
<i>RESTRICT</i>	-0.4249	(-5.29) ***	-0.4125	(-5.25) ***	-0.5513	(-7.39) ***	-0.4007	(-5.09) ***
<i>SSSR</i>	-0.4771	(-8.13) ***	-0.4895	(-8.52) ***	-0.6903	(-12.62) ***	-0.4916	(-8.57) ***
<i>RESTRICT</i> × <i>SSSR</i>	1.6094	(15.3) ***	1.5584	(15.27) ***	1.5345	(15.84) ***	1.5505	(15.27) ***
<i>lnSIZE</i>	-0.1679	(-17.36) ***	-0.1576	(-16.81) ***	-0.1933	(-22.28) ***	-0.1574	(-17.12) ***
<i>MB</i>	0.0433	(17.06) ***	0.0430	(17.86) ***	0.0395	(18.14) ***	0.0410	(17.58) ***
<i>LEV</i>	0.9102	(21.46) ***	0.8788	(22.31) ***	0.7284	(21.35) ***	0.8579	(22.28) ***
<i>IROA</i>	3.4741	(6.11) ***	3.2620	(6.04) ***	2.3978	(4.90) ***	3.1925	(6.01) ***
<i>VOL</i>	0.0328	(11.97) ***	0.0370	(14.01) ***	0.0358	(14.48) ***	0.0362	(13.86) ***
<i>CHOLD</i>	-0.0100	(-0.57)	-0.0075	(-0.44)	0.0042	(0.25)	-0.0040	(-0.24)
<i>CDUAL</i>	0.1178	(1.47)	0.1069	(1.37)	0.1128	(1.55)	0.0963	(1.29)
<i>BINDP</i>	-0.1134	(-4.46) ***	-0.1046	(-4.26) ***	-0.1330	(-5.72) ***	-0.1167	(-4.75) ***
<i>BSize</i>	-0.0073	(-0.42)	-0.0076	(-0.44)	-0.0148	(-0.91)	-0.0065	(-0.38)
Industry effect	Yes		Yes		Yes		Yes	
Region effect	Yes		Yes		Yes		Yes	
Adjusted R ²	0.2496		0.2507		0.2211		0.2451	
Observations	9863		9863		9863		9863	

The table presents regression analyses. Our sample covers Chinese listed firms over 2001–2008. We exclude the firms listed after the launch of the Split Share Structure Reform (2006 onwards) because trading constraints are no longer imposed on them, and they are not affected by the reform anyway. The dependent variables in Regression 1 to 4 are share price informativeness measures Ψ_1 to Ψ_4 respectively and estimated using daily stock returns. Ψ_1 and Ψ_2 are respectively based on the daily returns estimated by Equation (2) and (3). Ψ_3 accounts for industry-wide return variations (Equation 5) following Gul et al., (2010). Ψ_4 uses Equations 6a, 6b, and 6c for Chinese listed firms that issues pure A shares, B shares, and H shares respectively. *RESTRICT* is the ratio of restricted shares relative to the total number of shares of the listed firm. *SSSR* is 1 for years from 2006 onward and 0 otherwise. *lnSIZE* is natural log of market capitalization. *MB* is market-to-book value. *LEV* is debt-to-total asset ratio. *IROA* is industry median adjusted return on asset measured as operating income divided by total asset. *VOL* is trading volume measured as turnover. *CHOLD* is 1 for firms with CEO shareholding in yearly cross-sectional top or bottom 25 percentile and 0 otherwise. *CDUAL* is 1 for firms with CEO also serving as board chairman and 0 otherwise. *BINDP* is 1 for firms with proportion of independent directors above yearly cross-sectional median and 0 otherwise. *BSize* is 1 for firms with board size above yearly cross-sectional median and 0 otherwise. Industry effect and Region effect indicate whether these effects are controlled in the analyses. The industry classification is

based on the first two digits of GICS (Global Industry Classification Standard) codes. The region classification is based on Firth et al. (2006), which groups firms into four regions based on the levels of economic development: 1. Shanghai and Shenzhen; 2. The more developed regions including open cities and provinces along the coast; 3. The inland provinces; 4. The least developed area in the north-western part of the country. For brevity we do not report the coefficient of the 10 industry dummy variables and 3 regional dummy variables. Regression 1 (2) exclude (include) the control of industry and regional effects and reports adjusted R^2 . Regression 3 uses bootstrapped median regression (BSQREG) and reports pseudo R^2 . All t-statistics are reported in parentheses. The t-statistics for Regressions 1 and 2 are adjusted for firm clustering. *, **, and *** indicates significance to 10%, 5%, and 1% level respectively.

TABLE 6: Robustness tests with firm-specific initial year of reform excluded from sample

	Regression 1			Regression 2			Regression 3			Regression 4		
Intercept	7.6124	(24.60)	***	6.5325	(22.27)	***	7.6907	(23.38)	***	6.7165	(24.99)	***
<i>STATE</i>	-0.1541	(-2.72)	***	-0.1983	(-4.64)	***						
<i>RESTRICT</i>							-0.3424	(-2.82)	***	-0.3445	(-2.85)	***
<i>SSSR</i>	-0.0062	(-0.14)		-0.1175	(-3.01)	***	-0.4478	(-5.30)	***	-0.3583	(-3.99)	***
<i>STATE</i> × <i>SSSR</i>	0.2894	(2.93)	***	0.2134	(2.59)	***						
<i>RESTRICT</i> × <i>SSSR</i>							1.1343	(7.34)	***	0.6410	(4.42)	***
<i>lnSIZE</i>	-0.2913	(-19.86)	***	-0.2424	(-17.29)	***	-0.2879	(-19.90)	***	-0.2455	(-22.59)	***
<i>MB</i>	0.0123	(3.82)	***	0.0134	(5.20)	***	0.0121	(3.73)	***	0.0129	(3.92)	***
<i>LEV</i>	0.4564	(9.17)	***	0.4198	(7.29)	***	0.4310	(8.62)	***	0.4341	(9.20)	***
<i>IROA</i>	2.6745	(3.59)	***	2.1978	(2.84)	***	2.3270	(3.12)	***	2.4508	(3.85)	***
<i>VOL</i>	-0.0136	(-3.69)	***	-0.0088	(-2.08)	**	-0.0137	(-3.70)	***	-0.0093	(-2.24)	**
<i>CHOLD</i>	0.0116	(0.42)		0.0009	(0.04)		0.0192	(0.70)		0.0027	(0.10)	
<i>CDUAL</i>	-0.1297	(-1.21)		-0.1672	(-1.75)	*	-0.1423	(-1.34)		-0.1611	(-2.15)	**
<i>BINDP</i>	0.1749	(5.53)	***	0.1408	(3.03)	***	0.1682	(5.33)	***	0.1354	(3.23)	***
<i>BSIZE</i>	0.0044	(0.17)		0.0005	(0.02)		0.0023	(0.09)		-0.0102	(-0.52)	
Industry effect	Yes			Yes			Yes			Yes		
Region effect	Yes			Yes			Yes			Yes		
BSQREG	No			Yes			No			Yes		
Adjusted R ²	0.0999						0.1051					
Pseudo R ²				0.0629						0.0635		
Observations	8634			8634			8634			8634		

The table presents regression analyses. Our sample covers Chinese listed firms over 2001-2008. We exclude the firms listed after the launch of the Split Share Structure Reform (2006 onwards) because trading constraints are no longer imposed on them, and they are not affected by the reform anyway. Observations in firm-specific first year of reform are also excluded from sample. The dependent variable is share price informativeness measure Ψ_2 derived from residual variances of time-series regressions of firm-specific weekly excess returns on Chinese domestic and U.S. stock market weekly excess returns. *STATE* (*RESTRICT*) is with the ratio of state shares (restricted shares) relative to the total shares of the listed firm. *SSSR* is 1 for years from 2006 onward and 0 otherwise. *lnSIZE* is natural log of market capitalization. *MB* is market-to-book value. *LEV* is debt-to-total asset ratio. *IROA* is industry median adjusted return on asset measured as operating income divided by total asset. *VOL* is trading volume measured as turnover. *CHOLD* is 1 for firms with CEO shareholding in yearly cross-sectional top or bottom 25 percentile and 0 otherwise. *CDUAL* is 1 for firms with CEO also serving as board chairman and 0 otherwise. *BINDP* is 1 for firms with proportion of independent directors above yearly cross-sectional median and 0 otherwise. *BSIZE* is 1 for firms with board size above yearly cross-sectional median and 0 otherwise. Industry effect and Region effect indicate whether these effects are controlled in the analyses. The industry classification is based on the first two digits of GICS (Global Industry Classification Standard) codes. The region classification is based on Firth et al. (2006),

which groups firms into four regions based on the levels of economic development: 1. Shanghai and Shenzhen; 2. The more developed regions including open cities and provinces along the coast; 3. The inland provinces; 4. The least developed area in the north-western part of the country. For brevity we do not report the coefficient of the 10 industry dummy variables and 3 regional dummy variables. Regression 1 (2) exclude (include) the control of industry and regional effects and reports adjusted R^2 . Regression 3 uses bootstrapped median regression (BSQREG) and reports pseudo R^2 . All t-statistics are reported in parentheses. The t-statistics for Regressions 1 and 2 are adjusted for firm clustering. *, **, and *** indicates significance to 10%, 5%, and 1% level respectively.

TABLE 7: Robustness tests using firm-specific reform period

	Regression 1			Regression 2			Regression 3			Regression 4		
Intercept	8.6679	(25.95)	***	7.7943	(22.74)	***	8.5916	(25.01)	***	7.7505	(22.18)	***
<i>STATE</i>	-0.1773	(-3.09)	***	-0.2042	(-3.80)	***						
<i>RESTRICT</i>							-0.4672	(-3.66)	***	-0.4675	(-2.65)	***
<i>REFORM</i>	0.1950	(4.54)	***	-0.0060	(-0.14)		-0.4082	(-4.42)	***	-0.4334	(-3.52)	***
<i>STATE</i> × <i>REFORM</i>	0.5452	(6.13)	***	0.5013	(4.13)	***						
<i>RESTRICT</i> × <i>REFORM</i>							1.5579	(9.60)	***	1.2284	(6.20)	***
<i>lnSIZE</i>	-0.3346	(-24.34)	***	-0.2943	(-25.73)	***	-0.3211	(-23.86)	***	-0.2857	(-22.68)	***
<i>MB</i>	0.0036	(1.21)		0.0077	(2.20)	**	0.0033	(1.08)		0.0069	(1.78)	*
<i>LEV</i>	0.3773	(7.84)	***	0.3753	(11.65)	***	0.3757	(7.85)	***	0.3932	(6.92)	***
<i>IROA</i>	2.6056	(3.59)	***	2.6056	(3.97)	***	2.0107	(2.75)	***	2.1641	(2.73)	***
<i>VOL</i>	-0.0183	(-4.91)	***	-0.0101	(-3.18)	***	-0.0176	(-4.70)	***	-0.0129	(-3.88)	***
<i>CHOLD</i>	0.0117	(0.45)		0.0004	(0.01)		0.0170	(0.66)		0.0162	(0.46)	
<i>CDUAL</i>	-0.0988	(-0.93)		-0.0910	(-0.92)		-0.1001	(-0.95)		-0.2108	(-2.05)	**
<i>BINDP</i>	0.1330	(4.34)	***	0.1186	(4.36)	***	0.1267	(4.17)	***	0.1031	(3.16)	***
<i>BSIZE</i>	0.0058	(0.24)		0.0099	(0.37)		0.0056	(0.23)		0.0108	(0.46)	
Industry effect	Yes			Yes			Yes			Yes		
Region effect	Yes			Yes			Yes			Yes		
BSQREG	No			Yes			No			Yes		
Adjusted R ²	0.089						0.0968					
Pseudo R ²				0.0525						0.0554		
Observations	9871			9871			9871			9871		

The table presents regression analyses. Our sample covers all Chinese listed firms over 2001-2008. We exclude the firms listed after the launch of the Split Share Structure Reform (2006 onwards) because trading constraints are no longer imposed on them, and they are not affected by the reform anyway. The dependent variable is share price informativeness measure Ψ_2 derived from residual variances of time-series regressions of firm-specific weekly excess returns on Chinese domestic and U.S. stock market weekly excess returns. *STATE* (*RESTRICT*) is with the ratio of state shares (restricted shares) relative to the total shares of the listed firm. *REFORM* is 1 for the year in which the selected firm has delivered the compensation following the negotiation and voting process and all years onward, and 0 otherwise. *lnSIZE* is natural log of market capitalization. *MB* is market-to-book value. *LEV* is debt-to-total asset ratio. *IROA* is industry median adjusted return on asset measured as operating income divided by total asset. *VOL* is trading volume measured as turnover. *CHOLD* is 1 for firms with CEO shareholding in yearly cross-sectional top or bottom 25 percentile and 0 otherwise. *CDUAL* is 1 for firms with CEO also serving as board chairman and 0 otherwise. *BINDP* is 1 for firms with proportion of independent directors above yearly cross-sectional median and 0 otherwise. *BSIZE* is 1 for firms with board size above yearly cross-sectional median and 0 otherwise. Industry effect and Region effect indicate whether these effects are controlled in the analyses. The industry classification is based on the first two digits of GICS (Global Industry Classification Standard) codes. The region classification is based on Firth et al. (2006), which groups firms into four regions based on the levels of economic development: 1. Shanghai and Shenzhen; 2. The more developed regions including open cities and provinces along the coast; 3. The inland provinces; 4. The least developed area in the

north-western part of the country. For brevity we do not report the coefficient of the 10 industry dummy variables and 3 regional dummy variables. Regression 1 (2) exclude (include) the control of industry and regional effects and reports adjusted R^2 . Regression 3 uses bootstrapped median regression (BSQREG) and reports pseudo R^2 . All t-statistics are reported in parentheses. The t-statistics for Regressions 1 and 2 are adjusted for firm clustering. *, **, and *** indicates significance to 10%, 5%, and 1% level respectively.

TABLE 8: Robustness tests excluding 2008 when IFRS may affect information environment

	Regression 1			Regression 2			Regression 3			Regression 4		
Intercept	13.8328	(23.87)	***	12.6436	(23.29)	***	14.0850	(21.98)	***	12.9676	(19.54)	***
<i>STATE</i>	-0.1924	(-2.51)	**	-0.1455	(-2.68)	***						
<i>RESTRICT</i>							-0.4796	(-2.75)	***	-0.5029	(-3.45)	***
<i>REFORM</i>	1.2788	(14.78)	***	1.0280	(11.78)	***	0.9567	(5.65)	***	0.5672	(3.53)	***
<i>STATE</i> × <i>REFORM</i>	0.5573	(3.32)	***	0.4352	(3.59)	***						
<i>RESTRICT</i> × <i>REFORM</i>							0.8841	(3.11)	***	1.0444	(4.65)	***
<i>lnSIZE</i>	-0.5615	(-26.69)	***	-0.5004	(-27.46)	***	-0.5622	(-25.39)	***	-0.4955	(-20.90)	***
<i>MB</i>	-0.0028	(-0.48)		-0.0127	(-2.77)	***	-0.0018	(-0.31)		-0.0104	(-1.81)	*
<i>LEV</i>	0.5615	(6.05)	***	0.6847	(10.05)	***	0.5585	(5.99)	***	0.6679	(7.89)	***
<i>IROA</i>	2.4878	(1.90)	*	5.4410	(7.07)	***	2.4305	(1.84)	*	5.2839	(4.94)	***
<i>VOL</i>	-0.0828	(-11.89)	***	-0.0657	(-9.42)	***	-0.0806	(-11.28)	***	-0.0592	(-8.47)	***
<i>CHOLD</i>	-0.0271	(-0.69)		0.0006	(0.01)		-0.0324	(-0.82)		-0.0029	(-0.10)	
<i>CDUAL</i>	-0.1548	(-1.06)		-0.0763	(-0.34)		-0.1697	(-1.15)		-0.1359	(-0.75)	
<i>BINDP</i>	0.1186	(2.44)	**	0.1090	(2.72)	***	0.1138	(2.35)	**	0.0928	(2.82)	***
<i>BSIZE</i>	0.0033	(0.09)		0.0306	(1.36)		0.0060	(0.16)		0.0391	(1.39)	
Industry effect	Yes			Yes			Yes			Yes		
Region effect	Yes			Yes			Yes			Yes		
BSQREG	No			Yes			No			Yes		
Adjusted R ²	0.1495						0.1491					
Pseudo R ²				0.0825						0.0829		
Observations	8019			8019			8019			8019		

The table presents regression analyses. Our sample covers Chinese listed firms over 2001-2007. We exclude the firms listed after the launch of the Split Share Structure Reform (2006 onwards) because trading constraints are no longer imposed on them, and they are not affected by the reform anyway. Observations in firm-specific first year of reform are excluded from sample. The dependent variable is share price informativeness measure Ψ_2 derived from residual variances of time-series regressions of firm-specific weekly excess returns on Chinese domestic and U.S. stock market weekly excess returns. *STATE* (*RESTRICT*) is with the ratio of state shares (restricted shares) relative to the total shares of the listed firm.. *SSSR* is 1 for years from 2006 onward and 0 otherwise. *lnSIZE* is natural log of market capitalization. *MB* is market-to-book value. *LEV* is debt-to-total asset ratio. *IROA* is industry median adjusted return on asset measured as operating income divided by total asset. *VOL* is trading volume measured as turnover. *CHOLD* is 1 for firms with CEO shareholding in yearly cross-sectional top or bottom 25 percentile and 0 otherwise. *CDUAL* is 1 for firms with CEO also serving as board chairman and 0 otherwise. *BINDP* is 1 for firms with proportion of independent directors above yearly cross-sectional median and 0 otherwise. *BSIZE* is 1 for firms with board size above yearly cross-sectional median and 0 otherwise. Industry effect and “Region effect” indicate whether these effects are controlled in the analyses. The industry classification is based on the first two digits of GICS (Global Industry Classification Standard) codes. The region classification is based on Firth et al. (2006), which groups firms into four regions based on the levels of economic development: 1. Shanghai and Shenzhen; 2. The more developed regions including open cities and provinces along the coast; 3. The inland provinces; 4. The least

developed area in the north-western part of the country. For brevity we do not report the coefficient of the 10 industry dummy variables and 3 regional dummy variables. Regression 1 (2) exclude (include) the control of industry and regional effects and reports adjusted R^2 . Regression 3 uses bootstrapped median regression (BSQREG) and reports pseudo R^2 . All t-statistics are reported in parentheses. The t-statistics for Regressions 1 and 2 are adjusted for firm clustering. *, **, and *** indicates significance to 10%, 5%, and 1% level respectively.